

From: Bob Waltz/=TMS/Toyota.

Sent:9/29/2009 7:18 AM.

To: [-] Gary E Smith/=TMS/Toyota@Toyota.

Cc: [-] .

Bcc: [-] .

Subject: Fw: Sudden Unintended Acceleration Redux: The Unresolved Issue Article.

fyi

----- Forwarded by Bob Waltz/TMS/Toyota on 09/29/2009 07:17 AM -----

Jill Day/WDC/Toyota_NY@TOYOTA_NY

09/25/2009 09:19 AM

To Barbara McDaniel/T00/TMMNA@TMMNA, Bob Daly/TMS/Toyota@Toyota, Bob Waltz/TMS/Toyota@Toyota, Chris Santucci/WDC/Toyota_NY@Toyota_NY, Christopher Reynolds/TMS/Toyota@Toyota, Dian Ogilvie/Admin/Avalon/Toyota_NY@TOYOTA_NY, Greg Thome/TMS/Toyota@Toyota, Hiroshi Hashimoto/EA/Avalon/Toyota_NY@Toyota_NY, Irv Miller/Exec/TMS/Toyota@Toyota, Jim Wiseman/T00/TMMNA@TMMNA, Joe Tetherow/TMS/Toyota@Toyota, John Hanson/TMS/Toyota@Toyota, jo_cooper@tma.toyota.com, Martha Voss/WDC/Toyota_NY@Toyota_NY, Masaki Hosoe/Lexus/Toyota@Toyota, Michael Goss/T00/TMMNA@TMMNA, Mike Michels/TMS/Toyota@Toyota, Ming-Jou Chen/TMS/Toyota@Toyota, Roy Ito/TMS/Toyota@Toyota, Ryo Sakai/TMS/Toyota@Toyota, satoshi_aoki@tma.toyota.com, Shunji Yoshida/Admin/Avalon/Toyota_NY@Toyota_NY, sohtsuji@tma.toyota.com, Steven Curtis/EA/Avalon/Toyota_NY@Toyota_NY, Tom Lehner/Admin/Avalon/Toyota_NY@Toyota_NY, Yoshi Inaba/TMS/Toyota@Toyota

cc

Subject Sudden Unintended Acceleration Redux: The Unresolved Issue Article

Following is the article that Martha Voss mentioned on the call earlier.

Here's the link:

<http://www.safetyresearch.net/2009/07/20/sudden-acceleration/>

Sudden Unintended Acceleration

Sudden Unintended Acceleration can be rooted in a variety of vehicle defects including ergonomic design flaws, mechanical or electro-mechanical failures, or electronic failures. The article below, republished from Safety Research & Strategies bi-monthly publication, The Safety Record, is an overview of SUA.

Sudden Unintended Acceleration Redux: The Unresolved Issue

The Safety Record, Vol. 6, I3, June – July 2009

Copyright © Safety Research & Strategies, Inc.

SAN LUIS OBISPO, CA – On February 5, 2007, Bulent and Anne Ezal were headed to lunch at the Pelican Point Restaurant in Pismo Beach, California. The restaurant is nestled on the edge of a cliff, affording dramatic views of the Pacific Ocean below. The parking lot was downhill of the restaurant, so Ezal rode the brakes of his 2005 Camry as he approached a parking space. He was at a complete stop, when the Camry suddenly accelerated, jumping a small curb, crashing through a fence and over the bluff. The vehicle fell 70 feet to the rocks below, and turned over once, coming to rest in the surf. Anne Ezal died of her injuries in the crash. Bulent Ezal later recovered.

Seven months later, Jean Bookout and her friend Barbara Schwarz were exiting Interstate Highway 69 in Oklahoma – also in a 2005 Camry. As she sped down the ramp, Bookout, the driver, realized that she could not stop her car. She pulled the parking brake, leaving a 100-foot skid mark from right rear tire, and a 50-foot skid mark from the left. The Camry, however, continued speeding down the ramp, across the road at the bottom, and finally came to rest with its nose in an embankment. Schwarz died of her injuries; Bookout spent two months recovering from head and back injuries.

Same make; same model; same problem. Two severe crashes; two deaths; two cases of serious injury. According to the National Highway Traffic Safety Administration, however, the Toyota Camry doesn't have a problem with sudden unintended acceleration (SUA). In between these horrific crashes, the agency denied a petition requesting a defect investigation from the owner of a 2006 Camry, who complained that the engine of his current car and the 2005 Camry that he previously owned repeatedly surged. NHTSA's Office of Defects Investigation briefly looked into the complaint, but came up empty.

"ODI has not identified a vehicle-based defect that would have produced the alleged engine surge in the petitioner's vehicle, nor was it able to witness such an event when road testing the petitioner's vehicle. Evaluation of a suspect throttle actuator removed from the petitioner's vehicle did not reveal a component problem, warranty and parts sales of the actuator are unremarkable. These data do not support the existence of a wide-spread defect or ongoing concern," the agency said in its April 2007 decision.

Another SUA inquiry closed with a whimper, and without a satisfactory explanation for a phenomenon that has plagued various makes and models for nearly 30 years. Since 1999, the agency has received seven defect petitions to investigate sudden unintended acceleration and launched eight SUA investigations into GMs, Fords, Toyotas and Volkswagen models. In the last decade, manufacturers have launched 31 recalls. More typically, manufacturers deny a mechanical problem and blame the problem on driver error. If the complaint numbers are high, they blame that on a media-induced frenzy. NHTSA, for the most part, has thrown up its hands, opening – and then closing – multiple investigations without finding a defect. This has led some to conclude that SUA is solely the province of pedal misapplication and stuck floor mats.

Attorney Graham Esdale of the Beasley Allen law firm in Montgomery, Alabama, represents the victims of the Oklahoma crash. He says it's frustrating that the agency cannot or will not tease out the causes of SUA.

"We know this is happening out there," he says. "Unfortunately, if the person is elderly they are going to certainly going to blame them for causing the accident, when we know that's not the case. Instead of trying to fix the problem, they blame the driver."

Indeed, the history of sudden unintended acceleration is studded with poor research, regulatory omissions and industry success in holding off any serious outside examination of malfunctions within a vehicle's electronic systems.

Sudden unintended acceleration is a complex problem. There are multiple causes when a vehicle shoots forward or back in apparent contradiction to the driver's commands: design defects which induce driver error – such as poor pedal placement, the lack of a shift interlock, floor mat interference, mechanical or electromechanical defects and electronic defects. The latter –which is the most difficult to pinpoint – is nonetheless a more likely possibility as vehicle systems rely more heavily on sophisticated computer-driven electronics. And yet, automakers and NHTSA behave as though it is perfectly rational to assume that electronics housed in the hostile automotive environment – including the fault detection system – will always function as intended, and that malfunctions will be easily reproduced in a laboratory setting.

Elsewhere, however, the case has been persuasively made that NHTSA and automakers have ignored the real possibility of intermittent and other faults in the electronic systems of today's automobiles. The 2003 reference book, *Sudden Acceleration*, by Carl E. Nash, of the National Crash Analysis Center at George Washington University, Clarence Ditlow, of the Center for Auto Safety, James Castelli and Michael Pecht, Professor and Director CALCE Electronic Products and Systems Center at the University of Maryland, argue that the auto manufacturers lag behind those in other industries whose products rely on electronic systems in understanding the myriad ways their microprocessors and electronics components can fail. NHTSA, the authors conclude, has also failed miserably in its attempts to find a cause other than a floor mat or driver error, because the agency employs an arbitrarily narrow definition of SUA – that it must occur from a standstill –and has conducted its investigations on incorrect assumptions and illogical reasoning.

Drivers have been complaining about sudden unintended acceleration events for a quarter of a century and continue to lodge these complaints with manufacturers and NHTSA. Yet, NHTSA has made virtually no substantive progress toward understanding how electronic systems housed in an environment subject to heat, vibration, sudden shocks, various levels of electromagnetic interference, moisture, and other corrosive conditions could fail; or how they could be detected; or what appropriate countermeasures must be instituted other than expecting drivers to somehow overcome an open throttle on a runaway vehicle. They slumber, while vehicles grow ever more stuffed with electronics that control the vehicle's braking, stability and speed.

Attorney (and engineer) Don Slavik, who represents Ezal, is hoping that NHTSA will take a second look at the problems of the 2005 Camry – although he isn't sanguine about the outcome.

"It's clear the NHTSA lacks the resources to fully investigate this. NHTSA does not have special staff with experience in electronic control systems – and their small staff is tasked with a wide range of responsibilities," says Slavik of the Milwaukee firm, Habush, Habush & Rottier. "That's where the tort system comes in to assist more fully in investigating this problem, which affects millions of vehicles." Sean Kane, president of SRS agrees. "SUA presents unique and resource intensive investigation that can quickly overwhelm the NHTSA defects office. Further, the agency has a history of dismissing SUA unless there are mechanical or driver error issues, which only complicates matters."

Short People Can't Drive Audis

In the 1980s, Audi became the poster child for Sudden Unintended Acceleration. And in many ways, this vehicle's SUA problem became the model of how these problems would be investigated by NHTSA, defended by the industry and used as the sine qua non of SUA myth-busting.

More than 1,000 consumers alleged that their Audi 5000 vehicles had accelerated without driver input; 175 had been injured, and four died in SUA crashes. The company denied that there was anything wrong with the vehicle and blamed the problem on shorter than average drivers who did not have much experience driving an Audi. These

small, confused drivers had mistakenly depressed the gas pedal when they meant to step on the brake, Audi said. The response was a public relations and marketing nightmare. Audi sales plunged, and the complaints continued. The Audi 5000 was the subject of an infamous 60 Minutes story, in which the news program attempted to simulate SUA. The broadcast drove Audi sales down further, and the network was heavily criticized for its one-sided story. As the history is often recounted today, NHTSA vindicated Audi and CBS never apologized for maligning the automaker.

However, between 1982 and 1987, Audi launched five recalls to address the problem. The first three attempted to fix what Audi had characterized as the driver-error problem by tweaking the pedal positions. The fifth and final recall for 250,000 1978 to 1987 vehicles added a brake-shift interlock – which requires drivers to depress the brake pedal before shifting out of the Park position.

The fourth recall was probably the most telling about the Audi 5000's SUA problem. In 1987, Audi recalled 81,000 Audi 5000s from the 1986 and 1987 model years, for worn idle stabilizer units. As Audi explained to its customers: "The idle stabilizer has the purpose of maintaining uniform engine idle speed by regulating air flow under different operating conditions, such as variations in engine temperature, and on/off cycling of the air conditioner or power assist pump. Excessive idle stabilizer wear causes engine idle fluctuations which increase with the usage of the car. If a worn unit is not replaced in a timely fashion, the engine idle could ultimately see-saw so severely that it may surprise a driver who is not acquainted with the vehicle's condition and fails to apply the brake. Under these circumstances, there is a risk of a collision in a confined space with the possibility of injury." (In others words, dear driver, it's still your fault.)

Audi received much of the attention, due in part to victims, who organized and advocated very effectively for themselves. NHTSA also received a significant number of complaints in the 1980s alleging SUA in Nissan 280/300ZX and Maxima, Acura Legend, Honda Accord, and various Ford, GM and Mercedes models. NHTSA opened a number of defect investigations into SUA, and closed many of them without finding a defect trend. But some NHTSA investigations did prod manufacturers into initiating recalls. For example, Nissan recalled 1979-1987 280/300ZXs to retrofit brake-shift interlocks. Other recalls have involved the replacement or modification of mechanical and electronic components that cause the throttle to stick or open unintentionally. Some of these components are related to the vehicles' cruise control.

In 1989 NHTSA published "An Examination of Sudden Acceleration." This report was intended to end all debates on SUA. Its primary conclusion was that only the driver's foot or the cruise control could move the throttle to the wide-open position. The study also noted that SUA could be caused by simple mechanical failures of the throttle cable or floor mat interference. Under these conditions, a significant increase in the driver's ability to stop the vehicle was also noted. However, the general spin was that NHTSA could not find any vehicle defects causing SUA. The condition, the agency concluded was the result of driver error, although the agency noted that it could be induced by poor vehicle design (i.e., brake, accelerator pedal placement and offset). The study recommended the installation of automatic shift-locks (ASL), which require the driver to depress the brake pedal before the vehicle can be shifted out of Park to prevent the driver from depressing the accelerator instead of the brake.

Dr. Antony Anderson, an electrical engineering consultant in the UK who has examined numerous SUA crashes, says that NHTSA's definitive research report is neither definitive nor research. The agency based its report on nine underlying assumptions, but did not provide the basis for those assumptions. The agency defined sudden unintended acceleration as only instances where the vehicle lurches suddenly forward or in reverse from a standstill. This automatically discounted many other situations in which a vehicle's throttle is wide open in direct contradiction to the driver's demands, be it at full speed, a slow speed or in a cruise control mode. Further, he says, the systems that NHTSA examined in the late 1980s bear no resemblance to fully electronic throttle systems of today. "It's a travesty," Anderson said. "That report has no relevance whatsoever, but manufacturers have sheltered themselves behind it for years."

Nonetheless, the 1989 report and the significant numbers of reported SUA incidents did prompt manufacturers to adopt shift-interlocks in their vehicles in the late 1980s.

The 1990: Cruise Control and Throttles

In the 1990s, SUA problems related to cruise control and other throttle malfunctions began to surface. Ford Motor Company has been a standout among its peers in SUA problems related to cruise control. Two juries have held Ford responsible for a deadly design flaw in the cruise control systems of millions of Ford vehicles, but the automaker has only recalled a fraction of the affected vehicles, leaving motorists vulnerable to episodes of sudden acceleration.

In March 1999, Ford announced that it had found a manufacturing defect with the cruise control cable and recalled 898,739 Explorers, Rangers, Mustangs, Mountaineers and some F-series trucks in model years ranging from 1997 to 1999, with certain build dates. But internal documents indicated that as far back as the design process, speed control engineers knew cable contamination could result in the throttle being held open by the stuck actuator cable, and characterized that possibility as a severe failure. Engineers also predicted that the condition was unlikely to occur. But thousands of complaints from consumers about stuck throttles and sudden accelerations, and even the experiences of one of its own executives have proven otherwise. The defect was the actuator cable design of Ford's Next Generation Speed Control, which first appeared in 1991 models and, by 1995, was installed in all of the automaker's passenger vehicles, SUVs and light trucks with cruise control. As Ford engineers noted in their Failure Mode and Effects Analysis, over time, the speed control actuator cable can become contaminated with dirt, grease

or water where it enters the sheath, or “adjuster body” and bind in the open position, prohibiting the driver from closing the throttle and decreasing speed.

Since 1999, Ford has recalled numerous makes and models as far back as the 1991 model year for sticky throttle problems attributed to a variety of causes, including: 2000 Focus; 1998 Contour; 1999-2000 F-Series Super Duty; 1998 Mercury Mystique; 2002 Focus SVT Hatchbacks; 1991—1995 Taurus and Sables; 1997 Aerostars; 2001 Ford Escapes, 2000 and 2001 Explorers; 2001 Explorer Sports, 2001 Mazda Tributes, 2001 and 2002 Mazda MVPs. In July 2005, NHTSA’s Office of Defects Investigations opened a preliminary probe into stuck throttle complaints on 2002 Explorers and Mountaineers. Ford said that it had identified a faulty wire in the accelerator cable, but had remedied the problem by changing the wire design. ODI closed the investigation without further action in November 2005.

The Jeep Cherokee was another SUA stand-out in the 1990s. In 1990, Chrysler recalled 1989 and 1990 model 6-cylinder Cherokees to replace a throttle position sensor that was causing “intermittent high idle” after the engine was started. In 1992, it issued several technical service bulletins to repair various parts in Cherokees and Grand Cherokees. The primary symptom was termed vehicle “bucking” or “surging.” Nonetheless, sudden acceleration complaints involving the Jeep Cherokee and Grand Cherokee were far above their closest peer vehicle. The problem was so widespread that the International Carwash Association issued an alert to its employees about the vehicle’s tendency to lurch forward while exiting the car wash (electromagnetic interference was thought by some experts to play a role). In 1996, brake-to-shift interlocks became standard on the Jeep Cherokee. In 1997, as Primetime Live was preparing to air a story about SUA, and as the Center for Auto Safety was petitioning NHTSA to investigate, Chrysler announced that it would retrofit pre-1996 vehicles with a brake-to-shift interlock.

Floor Mats of Death

Unsecured floor mats have often been suspected of, or have taken the blame for, sudden unintended acceleration. Since 1968, the agency has launched nine separate probes of various levels of seriousness. Manufacturers have initiated 19 floor mat recalls, a handful of which presaged the closing of an investigation.

One of the most recent emanated from an Engineering Analysis of Toyota Lexus vehicles. Drivers reported that vehicles continued traveling full throttle despite attempts to stop the vehicle. Some reacted by applying the brake pedal multiple times, depleting the braking system’s vacuum-based power assist and overheating the brakes, which further diminished the brakes’ effectiveness. Others attempted to turn the vehicle off by depressing the engine control button, unaware that the button had to be depressed for three seconds to stop the engine when the vehicle is in motion. Toyota and the agency concluded that unsecured all-weather floor mats could entrap the gas pedal. In a September 26, 2007 letter to NHTSA, Toyota indicated that they would conduct a safety recall to replace the all weather mat with a redesigned mat. According to Toyota, the new mat design would reduce the potential for mat interference with the throttle pedal.

In 2008, the agency opened and closed within four months a Preliminary Evaluation into Weather Tech floor mats after four complaints of pedal interference in four different vehicles: Hyundai Azera and the Toyota Avalon, Camry and 4Runner. In closing the investigation, without a defect finding, The agency generally conceded the obvious: “various vehicle, mat and use factors can contribute to the potential for floor mat interference with accelerator pedal travel. Vehicle factors can include pedal and floor pan design. Mat factors can include thickness and geometry, particularly affecting the orientation of the leading edge in the vicinity of the accelerator pedal. Use factors that have been observed in interference incidents include failure to remove original floor mats when installing new mats (i.e., “stacked” floor mats), installing passenger side mats on the driver’s side, installing mats in an improper orientation (e.g., backwards, upside down), and failure to use retention devices.”

Today’s Unintended Acceleration: Can This Many Drivers be Confused?

In January 2008, the agency weighed a formal investigation into SUA in Toyota Tacomas, and it demonstrates how little has changed since 1985 and the Audi 5000. This time, the petitioner was William Kronholm, a journalist from Helena, Montana who alleged that his 2006 Toyota Tacoma suddenly accelerated twice in as many hours. According to his defect investigation request, in attempting to learn more, Kronholm went rifling through NHTSA’s complaints database and found that consumers had made 32 such complaints against Tacoma pick-up trucks, while other similar vehicles had only one or no complaints in a comparable two-year period.

Toyota responded by maintaining that there was nothing wrong with the Tacoma and that the spate of complaints had been ginned up by press attention and Internet virulence—a claim right out of the Audi playbook:

“The Tacoma has been the subject of extensive media coverage related to the possibility of sudden acceleration. In addition, there has been a high level of Internet activity going as far back as early 2007, including reports by members of Tacoma user groups detailing conversations with ODI staff and providing ODI contact information. Such exposure tends to generate consumer interest and complaints. Thus, the petitioner’s assertion that the Tacoma stands out from its peers based on a relatively high number of complaints in the NHTSA database is not a valid argument, since the other vehicles listed by the petitioner have simply not had the same media and Internet exposure.”

Two months later, NHTSA denied the defect petition, saying – in effect- that they wouldn’t be able to devote the resources to finding out why Toyota Tacomas were plagued by sudden unintended acceleration – despite 271 reported instances, resulting in 24 crashes and four injuries.

Manufacturers may deny SUA exists, NHTSA may declare that it isn’t worth its time to thoroughly investigate these

incidents, but consumers continue to lodge complaints about sudden unintended acceleration – and they can't all be little old ladies in the first stages of dementia. The complaints data show clearly that some manufacturers and some vehicles are outliers, with significantly more complaints than their peers. In the last 10 years, the agency has collected some 24,000 consumer complaints (source: www.VSIRC.com). When these complaints are sorted by manufacturer and vehicle and charted, the vast majority of automakers flat-line at the bottom. The trendline of complaints for four manufacturers—Ford, GM, Chrysler, and Toyota, however, float above their peers with occasional spikes, leading one to conclude that either these manufacturers have a problem, or the most confused consumers gravitate to their vehicles.

In the 2003 book *Sudden Acceleration*, the authors offer many scenarios in which an automotive electronic system or the electrical contacts may fail intermittently and defy easy detection: Physical traces on a microscopic scale due to “a poor connector contact, a dry joint, or a cracked PCB track that behaves as a good connection for 99.999 percent of the time” could be overlooked.

Anderson notes: “A control system adopting a different, anomalous and perhaps dangerous state once in a blue moon when there is an intermittent fault. The moment the fault disappears, the control system goes back to its normal state. It is hardly surprising that subsequent testing fails to reveal any fault. There are plenty of examples of physical systems having normal and faulty states and a small change may move the system from one state to the other. The manufacturers know this perfectly well. Their prescription of “wiggle tests” on connecting cables to identify poor connections and make them better is indicative of the vulnerability of car electrics to intermittent contacts.” And in denying that this problem even occurs, manufacturers have foregone countermeasures altogether, Anderson said.

“The problem really is: these systems are designed so if they do fail there is nothing the driver can do about it.”

More on SUA:

Sudden Unintended Acceleration Complaints: 1999 to Present, by Make
NHTSA Investigations into Sudden Unintended Acceleration 1999-Present
Recalls Involving Sudden Unintended Acceleration 1999-Present
Source: www.VSIRC.com

Jill Day
TOYOTA MOTOR NORTH AMERICA, INC.
601 Thirteenth Street, NW, Suite 910 South
Washington, DC 20005
Tel: (202) 463-6855
Fax: (202) 463-6859
Email: jday@tma.toyota.com